

$$a = 10, a = \sqrt{a_x^2 + a_y^2}$$

$$a^2 = a_x^2 + a_y^2$$

$$a_y^2 = a^2 - a_x^2$$

$$a_x = \frac{dv}{dt}$$

$$V = \sqrt{V_x^2 + V_y^2}$$

$$V = \sqrt{(8t-2)^2 + (-6t)^2}$$

$$\Rightarrow V = \sqrt{100t^2 - 32t + 4}$$

$$C_v = \frac{200t - 32}{2 \cdot \sqrt{100t^2 - 32t + 4}}$$

$$\Rightarrow C_v = 1,167 \quad t = 1 \text{ min}$$

$$a_n = 9,93$$

$$R = \frac{v^2}{a_n} \Rightarrow R = 7,25$$

السؤال الثاني (15 درجات):

$$n = 1200 \text{ rpm} \Rightarrow \omega_0 = \frac{2\pi n}{60}$$

$$\Rightarrow \omega_0 = 40\pi \frac{\text{rad}}{\text{s}}$$

$$\omega = 80 \cdot 2\pi \Rightarrow \omega = 160\pi \text{ rad}$$

$$\omega = 0$$

$$\omega = \epsilon t + \omega_0 \Rightarrow \epsilon t = -40\pi$$

$$\epsilon = -\frac{40\pi}{t}$$

السؤال الثالث (25 درجات):

$$x = 4t^2 - 2t + 2 \quad \text{--- (1)}$$

$$y = -3t^2 + 4 \quad \text{--- (2)}$$

$$\text{--- (2) --- (1)}$$

$$3t^2 = 4 - y$$

$$t^2 = \frac{4-y}{3} \Rightarrow t = \sqrt{\frac{4-y}{3}}$$

معوذات (1)

$$x = 4\left(\frac{4-y}{3}\right) - 2\sqrt{\frac{4-y}{3}} + 2$$

$$x = \frac{16}{3} - \frac{4}{3}y - 2\sqrt{\frac{4-y}{3}} + 2$$

$$x = -\frac{4}{3}y - 2\sqrt{\frac{4-y}{3}} + \frac{22}{3}$$

$$x = +4, \quad y = +1 \quad t = 1 \text{ min}$$

$$V_x = \frac{dx}{dt} = 8t - 2$$

$$V_y = \frac{dy}{dt} = -6t$$

$$V_x = +6, \quad V_y = -6$$

$$V = \sqrt{V_x^2 + V_y^2} \Rightarrow V = 6$$

$$a_x = \frac{dV_x}{dt} = +8, \quad a_y = 0$$

$$a_x = +8, \quad a_y = -6$$

$$a = \sqrt{a_x^2 + a_y^2} \Rightarrow a = 10$$

$$a_n = \frac{v^2}{R} \quad t = 1$$

$$V = 6 \cdot \sqrt{2}$$

$$I_x = I_{x_1} - I_{x_2} \quad (3)$$

$$I_x = 1543,3 \times 10^3 \quad (2)$$

$$i_x = \sqrt{\frac{I_x}{A}} \quad (3)$$

$$\Rightarrow i_x = 26,43 \quad (2)$$

تدريس المقرر:
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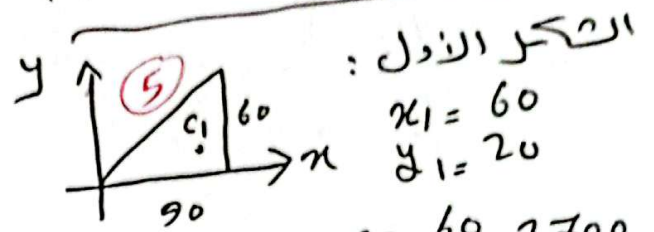


$$y = \frac{1}{2} \epsilon t^2 + \omega_0 t + y_0$$

$$1600 = \frac{1}{2} \left(-\frac{400}{t} \right) t^2 + (400)t + 0$$

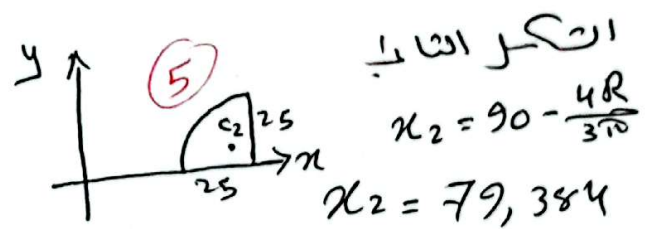
$$\Rightarrow \boxed{t = 8 \text{ sec}} \quad (6)$$

الزوايا الثلاث (3 درجات):



$$A_1 = \frac{90 \cdot 60}{2} = 2700$$

$$I_{x_1} = \frac{(90)(60)^3}{12} = 1620000$$



$$y_2 = \frac{48}{30} \Rightarrow y_2 = 10,616$$

$$A_2 = \frac{\pi R^2}{4} \Rightarrow A_2 = 490,625$$

$$I_{x_2} = \frac{\pi R^4}{16} = 76660,15$$

$$x_c = \frac{x_1 A_1 - x_2 A_2}{A_1 - A_2} \quad (3)$$

$$\Rightarrow x_c = 55,69 \quad (2)$$

$$y_c = \frac{y_1 A_1 - y_2 A_2}{A_1 - A_2} \quad (3)$$

$$y_c = 22,083 \quad (2)$$